



RF Exposure Evaluation

Limits

According to 447498 D01 General RF Exposure Guidance v06

The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3–3.0	614	1.63	*(100)	6
3.0–30	1842/f	4.89/f	*(900/f ²)	6
30–300	61.4	0.163	1.0	6
300–1500			f/300	6
1500–100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f ²)	30
30–300	27.5	0.073	0.2	30
300–1500			f/1500	30
1500–100,000			1.0	30

f = frequency in MHz

Friis transmission formula: $Pd = (Pout \cdot G) / (4 \cdot \pi \cdot r^2)$

Where

Pd = power density in mW/cm², **Pout** = output power to antenna in mW;

G = gain of antenna in linear scale, **Pi** = 3.1416;

R = distance between observation point and center of the radiator in cm

Pd is the limit of MPE, 1 mW/cm². If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

**Test Result of RF Exposure Evaluation**

The source of the evaluation data results is based on the test report ET-24070885E01/02

BT Antenna gain=0.00dBi

RFID Antenna gain=-1dBi/5.82dBi

FOR BLE

Mode	Output power (dBm)	Output power (mW)	Numeric antenna gain	Power Density at R=20cm (mW/cm ²)	Limit (mW/cm ²)	Result
GFSK	0.96	1.25	1.00	0.00025	1.0	PASS

FOR RFID ANT1

Fre.(GHz)	Output power (dBm)	Output power (mW)	Numeric antenna gain	Power Density at R=20cm (mW/cm ²)	Limit (mW/cm ²)	Result
0.91525	22.04	159.96	0.79	0.02515	1.0	PASS

FOR RFID ANT2

Fre.(GHz)	Output power (dBm)	Output power (mW)	Numeric antenna gain	Power Density at R=20cm (mW/cm ²)	Limit (mW/cm ²)	Result
0.92725	22.21	166.34	3.82	0.12650	1.0	PASS

FOR RFID ANT3

Fre.(GHz)	Output power (dBm)	Output power (mW)	Numeric antenna gain	Power Density at R=20cm (mW/cm ²)	Limit (mW/cm ²)	Result
0.92725	22.46	176.20	3.82	0.13400	1.0	PASS

If BT and RFID work simultaneously

BLE+RFID, the total power density is $0.00025/1+0.02515/1+0.12650/1+0.13400/1=0.2859<1$.

Then SAR evaluation is not require .